

CHAPTER 5

CONSULTATION, REFERENCES AND GLOSSARIES:

CONSULTATION

Public Participation Summary

Public Participation specific to the Gallatin National Forest Noxious and Invasive Weed Control EIS Project is summarized in this chapter. The summary describes the public involvement, identifies persons and organizations contacted during preparation of the EIS, and specifies time frames for accomplishing goals in accordance with 40 CFR 1506.6

Public involvement in the EIS process includes the necessary steps to identify and address public concerns and needs. The public involvement process assists the agencies in: (1) broadening the information base for decision making; (2) informing the public about the Proposed Action and the potential long-term impacts that could result from the project; and (3) ensuring that public needs are understood by the agencies.

Public participation in the EIS process is required by NEPA at three specific points: the scoping period, review of Draft EIS, and receipt of the Record of Decision.

Implementation

The public scoping period was initiated with the publication of a Notice of Intent (NOI) in the Federal Register on January 17, 2003. The NOI summarized the Proposed Action and a determination by the agencies that an EIS would be necessary for analysis of the proposal. A legal notice was published in the Bozeman Chronicle on January 12, 2003. Also, a scoping package that included a project summary was mailed to various agencies, groups, and individuals announcing the scoping period and describing the Proposed Action. In addition, this project has been listed in the Gallatin Forest NEPA Quarterly Report since October 2003. This project is also described on the Gallatin web page, <http://www.fs.fed.us/r1/gallatin/index.php?page=projects>.

For the Draft EIS was distributed as follows: a Notice of Availability was published in the Federal Register for the comment period. Also, a news release was provided at the beginning of the 45-day comment period on the Draft EIS to local news media. The Draft EIS was distributed to interested parties identified in the updated EIS mailing list.

Criteria and Methods by which Public Input is Evaluated

Comments received from the public are reviewed and evaluated by the Forest Service to determine if information provided in the comments would require a formal response or contain new data that may identify deficiencies in the EIS. Steps were then initiated to correct such deficiencies and to incorporate the information into the analysis.

Consultation with Others

The following organizations and agencies were consulted during preparation of the EIS:
U.S. Fish and Wildlife Service

U.S. Environmental Protection Agency
 Montana Department of Fish Wildlife and Parks
 Montana Department of Environmental Quality
 Crow Tribe

List of Preparers and Reviewers

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REFERENCES

- Alcock, R.E., M.S. McLachlan, A.E. Johnston, and K.C. Jones. 1998. Evidence for the presence of PCDD/Fs in the environment prior to 1900 and further studies on their temporal trends. *Environ. Sci. Technol.* 32 (11): 1580-1587.
- Anderson, D., K. Harper and R. Holmgren. 1982. Factors influencing development of cryptogammic soil crusts in Utah Desert. *Journal of Range Management* 35: 180-185.
- Arbuckle, T.E. et al 1999. Exposure to Phenoxy Herbicides and the Risk of Spontaneous Absortion. (Abstract). 10 (6).
- Bangs, E. 2003. Gray wolf recovery weekly progress report, week of 7/18/03 to 7/24/03. U.S. Fish & Wildlife Service. Helena, MT. 4 pages.
- Becker Underwood. 2003. Hi-Light takes the guess our of spraying!. Available online at www.bucolor.com,

- Bedunah, D. 1992 the complex ecology of weeds, grazing and wildlife. *Western Wildlands* 18:6-11.
- Bedunah, D. and J. Carpenter. 1989. The complex ecology of weeds, grazing and wildlife. *Western Wildlands*. 18:6-11.
- Belcher, J. and S. Wilson. 1992. Leafy spurge and the species composition of a mixed grass prairie. *Journal of Range Management* 42:172-175;
- Benke, R. J. 1992. Native trout of western North America. *American Fisheries Society Monograph* 6. Page 79.
- Bucher, R. 1984. The potential cost of spotted knapweed to Montana range users. *Cooperative Extension Service Bulletin*. Montana State University. Bozeman.
- Callihan, R., F. Northam, J. Johnson, E. Michalson and T. Prather. 1989. Yellow Starthistle. Biology and management in pasture and rangeland. University of Idaho Extension Public Service. Moscow.
- Casey, D. 2000. Partners in Flight Draft Bird Conservation Plan for Montana. *American Bird Conservancy*. Kalispell, MT. 288 pages.
- Charles J.M et al. 1996. Chronic dietary toxicity/oncogenicity studies on 2,4-Dichlorophenoxyacetic acid in rodents. *Fundamental and Applied Toxicology* 33:166-172.
- Cherry, M. 1997. The Black-backed and Three-toed Woodpeckers: Life History, Habitat Use, and Monitoring Plan. Unpublished review with management recommendations for the Gallatin National Forest, P.O.Box 130, Bozeman, MT, 59771. 19 pages.
- Cherry, M. 2002. Interoffice Memorandum: Darroch/Eagle Timber Sale - Cumulative effects of site-specific amendments for elk effective cover. *USDA Forest Service, Gallatin National Forest, Bozeman, MT*. 7 pages.
- Coffin, K. 1994. Population characteristics and winter habitat selection by pine marten in southwest Montana. Thesis, Montana State University. Bozeman, Montana. 93 pages.
- Cox, C. 1998. Herbicide Factsheet. Picloram. *Journal of Pesticide Reform* Vol. 19 No. 1 Pages 13-20.
- Davis, C. E. and H. F. Shovic. 1984. Soil survey of the Gallatin Forest area, southwestern Montana – interim draft report – April 1984. Gallatin National Forest, Box 130, Federal Building, Bozeman, MT. 59771
- Davis, C. E. and H. F. Shovic. 1996. Soil survey of the Gallatin Forest area, southwestern Montana. *USDA, NRCS*.
- Degraaf, R., V. Scott, R. Hamre, L. Ernst, and S. Anderson. 1991. Forest and Rangeland Birds of the United States. *Agriculture Handbook* 688. *USDA Forest Service*. 625 pages.
- DiTomaso, J. 1999. Risk analysis of various weed control methods. *Weed Science as repeated in Techline*. University of California, Davis.
- Dow AgroSciences 1999. Picloram and the Environment, Technical Profile. November.
- Durkins, P. 2001. 2,4-D: Human Health and Ecological Risk Assessment prepared for the USDA Forest Service. *Syracuse Environmental Research Associates, Inc.* Fayetteville, NY.
(<http://www.fs.fed.us/foresthealth/pesticide/risk.htm>)

- Elzinga, C. 1997. Conservation strategy for the Lemhi penstemon (*Penstemon lemhiensis*). Alder Springs Consulting. Idaho.
- Faustini, A. et al. 1996. Immunological changes among farmers exposed to phenoxy herbicides: preliminary observations. (Abstract) Occupational and Environmental Medicine. 53: 583-585.
- Felsot, A. 2001. Assessing the safety of herbicides for vegetation management in the Missoula Valley region – A question and answer guide to human health issues. Food and Environmental quality laboratory Washington State University. Richland.
- Fletcher, R. and A. Renney. 1963. A growth inhibitor found in *Centaurea spp.* Canadian Journal of Plant Science. 43:475-481.
- Fritts, S., E. Bangs, J. Fontaine, M. Johnson, M. Phillips, E. Koch, and J. Gunson. 1997. Planning and implementing a reintroduction of wolves to Yellowstone National Park and Central Idaho. Restoration Ecology 5: 7-27.
- James, L.F., J.O. Evans, M.H. Ralphs and R.D. Childs (eds.). 1991. Noxious Range Weeds. Westview Press, Boulder, CO.
- Gillespie J. and L. Hedstrom, 1979. Aeroallergens of western Montana. Rocky Mountain Medical Journal.
- Glover-Kerkvliet, J. 1995. Environmental assault on immunity. Environmental health perspectives. Vol. 103 No. 3, March 1995. Available on line at <http://ehpnet1.niehs.nih.gov/docs/1995/103-3/focus.html>
- Greater Yellowstone Bald Eagle Working Group. 1996. Greater Yellowstone bald eagle management plan: 1995 update. WY Game and Fish Department, Lander WY 825280. 47 pp.
- Gribble, G.W. 1994. The natural production of chlorinated compounds, Environ. Sci. Technol. 28 (7):310A-319A.
- Guenther, C. 1989. Ecological relationships of bitterbrush communities on the Mount Haggin Wildlife Management Area. MS Thesis. Montana State University. Bozeman.
- Harris, P. and R. Cranston. 1979. An economic evaluation of control methods for diffuse and spotted knapweed in western Canada. Canadian Journal of Plant Science 59:375-382.
- Harsh, P.B., R. Vepachedu, S. Gilroy, R.M. Callaway, J.M. Vivanco. 2003. Allelopathy and Exotic Plant Invasion: From Molecules and Genes to Species Interactions. Science Vol. 301, page 1377-1380.
- Hayward, G. G., D. T. Holland, R. Escano, N. Warren, C. Crocker-Bedford, T. Komberec, D. Sasse, L. Saunders-Ogg, B. Shuster. 1990. Goshawk habitat relationships, pages 19-27 in Old-growth habitat and associated wildlife species in the Northern Rocky Mountains. N. Warren, editor. USDA Forest Service, Northern Region, Missoula, Montana.
- Hayward, G.D., and J. Verner, technical editors. 1994. Flammulated, boreal, and great grey owls in the United States: A technical conservation assessment. General Technical Report RM -253. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 214 pages.
- Hutto, R., and J. Young. 1999. Habitat relationships of landbirds in the Northern Region, USDA Forest Service. General Technical Report RMRS-GTR-32. Ogden, UT. USDA Forest Service, Rocky Mountain Research Station. 72 pages.

- Ibrahim, M.A., G.G. Bond, T.A. Birke, P. Cole, F.N. Dost, P.E. Enterline, M. Gough, R.S. Greenburg, W.E. Harplerin, E. McConnell, I.C. Munrun, J.A. Swendberg, S.H. Zahm and J.D. Graham. 1991. Weight of evidence on the Human Carcinogenicity of 2,4-D. *Environmental Health Perspectives* 96:213-222.
- Information Ventures, Inc. 1995a. Glyphosate: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/glyphos.html>
- _____. 1995b. Triclopyr: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/triclopy.html>
- _____. 1995c. Chlosulfuron: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/chlorsul.html>
- _____. 1995d. Clopyralid methyl: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/clopyrali.html>
- _____. 1995e. Dicamba: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/dicamba.html>
- _____. 1995f. Hexazinone: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/hexazino.html>
- _____. 1995g. Imazapyr: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/imazapyr.html>
- _____. 1995h. Metsulfuron methyl: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/metsulf.html>
- _____. 1995i. Picloram: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/picloram.html>
- _____. 1995j. Sulfometuron methyl: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/sulfomet.html>
- _____. 1995k. 2,4-D: Pesticide Fact Sheet. Prepared for the U.S. Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/24d.html>
- IGBC 1998. Interagency Grizzly Bear Committee. Revised Grizzly Bear Committee Taskforce Report – Grizzly Bear/Motorized Access Management. 6 pages.
- _____. 2003. Final Conservation Strategy for the Grizzly Bear in the Yellowstone Area. USDI Fish and Wildlife Service. Missoula, MT. 160 pages.
- Kamrin, M. A. 1997 Pesticide profiles: toxicity, environmental impact, and fate. Lewis Publishers, New York.
- Klingman, D., R.W. Bovey and E.L. Kane. 1983. Systemic Herbicides For Weed Control, Phenoxy Herbicides, Dicamba, Picloram, Amitrole, and Glyphosate. USDA Extension Service. Washington D.C.
- Kujala, Q. 1993. Winter habitat selection and population status of pine marten in southwest Montana. Thesis, Montana State University. Bozeman, MT. 58 pages.

- Kurz, G. 1995. Ecological implications of Russian knapweed (*Centaurea repens* L.) infestation: Small mammal and habitat association. M.S. thesis Department of Rangeland Ecology. University of Wyoming. Laramie.
- Lacey, J., P. Husby and G. Handl. 1990. Observations of spotted and diffuse knapweed invasion into ungrazed bunchgrass communities in western Montana. *Rangelands* 12(1): 30-32.
- Lesica, P. and J. Shelly. 1991. Sensitive, threatened and endangered, vascular plants of Montana. Montana Natural Heritage Program. Occasional Publication No. 1 Montana State Library. Helena.
- Lesica, P. and J.S. Shelly. 1996. Competitive Effects of *Centaurea maculosa* on the Population Dynamics of *Arabis fecunda*. *Bull. Torrey Bot. Club.* 123:111-121.
- Macur, R. E., H. M. Gaber, J. M. Wraith, and W. P. Inskeep. 2000. *Jnl. Of Env. Qual.* 29:1939-1946.
- Maxell, B. 2000. Management of Montana's amphibians: a review of factors that may present a risk to population viability and accounts on the identification, distribution, taxonomy, habitat use, natural history, and status and conservation of individual species. Report to USFS Region 1, Order Number 43-0343-0-0224. University of Montana, Wildlife Biology Program. Missoula, Montana. 161 pp.
- May, B. 1996. Interpreting forest plan fishery resource management direction, a white paper. Internal Forest Service Document. Gallatin National Forest.
- Mattson, D., B. Blanchard, and R. Knight. 1990. Food habits of Yellowstone grizzly bears, 1977-1987. *Canadian Journal of Zoology.* 69: 1619-1629.
- Mattsson, J.K., J.M Charles, B.L. Yano, H.C. Cuny, R.D. Wilson, and J.S. Bus. 1997. Single -dose and chronic dietary neurotoxicity screening studies on 2,4 dichlorophenoxyacetic acid in rates. (Abstract) *Fundamentals and Applied Toxicology* 40: 101-119.
- Maybank, J., K. Yoshida, K. Wallace, M. Peters. 1978. Spray drift from agricultural pesticide applications. *Air Pollution Control Association Journal*, 28,10,1009-1014.
- MCCHB. 2001. Missoula City-County Health Board. Report to Missoula City Council on the health effects and environmental fate of herbicides as they pertain to weed management. www.ci.missoula.mt.us/packets/council/2001-11-19/referrals/herbicide%20Report.htm
- Mech, L. D. 1970. *The Wolf: The ecology and behavior of an endangered species.* University of Minnesota Press. St. Paul, MN. 384 pages.
- Miller, J.F., R.H. Frederick, and R.J. Tracer, 1973. *Precipitation Frequency Atlas of the Western United States, Volume 1-Montana.* NOAA - National Weather Service, Silver Spring, Maryland. <http://www.wrcc.dri.edu/pcpnfreq.html>
- Mantas, M. and J. Jones. 2001. Evaluating Risk to Native Plant Communities from Invasion of Selected Exotic Plant Species: A Proposal for the Western Montana Planning Zone. Unpublished report for USDA, Forest Service, Region 1, Missoula, MT. 22 pp.
- Montana Bald Eagle Working Group. 1994. *Montana Bald Eagle Management Plan.* Bureau of Reclamation. Billings, MT. 104 pages.
- Montana DEQ, Montana Water Quality Standards, ARM Title 17. Helena, Montana <http://www.fs.fed.us/r1/b-d/index.htm>

- Montana DEQ, 2002, Circular WQB-7, Montana Numeric Water Quality Standards. Helena, Montana. Helena, Montana <http://www.deq.state.mt.us/wqinfo/Circulars/WQB-7.PDF>
- Montana DEQ TMDL Process, http://www.deq.state.mt.us/ppa/mdm/tmdl/tmdl_index.asp
- Montana Native Heritage Program. 2001. Montana area plant field guide. Available on line at <http://nhp.nris.state.mt.us/>.
- Montana Natural Heritage Program. 1997-2000. Montana Rare Plant Field Guide. A web based information database. <http://orion2.nris.state.mt.us/mtnhp/plants/>, Montana Natural Heritage Program, Helena, MT.
- Montana State University, Extension Service, 1990. RAVE (Relative Aquifer Vulnerability Evaluation): an on-farm scoring system to evaluate aquifer vulnerability to pesticide contamination. 2nd Ed. MDA Technical Bulletin 90-01A. Montana Department of Agriculture, Agricultural Sciences Division, Helena, MT 59620-0201
- Moore, J. 1987. Inert ingredients in pesticide products; policy statement. Environmental Protection Agency. FR Doc. 87-8787. 16pp.
- Mustonen, R., J.Kangas, P.Vuojolahti and K.Linnainmaa. 1986. Effects on phenoxyacetic acids on the induction of chromosome aberrations in vitro and in vivo. (Abstract). *Mutagenesis* 1:241-245.
- Myers, J. and D. Berube. 1983. Diffuse knapweed invasion into rangeland in the dry interior of British Columbia. *Canadian Journal of Plant Science* 63:981-987.
- Nelson, J., and T. Legee. 1982. Nutritional requirements and food habits. Pages 323-367 in J.W. Thomas and D. Toweill, editors. *Elk of North America: Ecology and Management*. Stackpole Books. Harrisburg, PA. 698 pages.
- Nielson, P. 1999 A review of public health and ecological risks associated with the use of picloram and clopyralid herbicides for weed management on Mount Jumbo. Missoula City County Health Department. http://www.co.missoul.mt.us/measures.weeds_jumbo.htm
- Olsen, B. 1999. Page 4-18. Impacts of Noxious Weeds on Ecologic & Economic Systems. *Biology and Management of Noxious Rangeland Weeds In: Biology and Management of Noxious Rangeland Weeds*, Roger L. Sheley and Janet Petroff (eds.) Oregon State University Press. Corvallis.
- OSU. 1996a Oregon State University. EXTTOXNET Extension Toxicology Network, Pesticide Information Profiles. Triclopyr. <http://ace.orst.edu/info/exteeoxnet/pips/triclopyr.htm>
- _____. 1996b Oregon State University. EXTTOXNET Extension Toxicology Network, Pesticide Information Profiles. 2,4-D. <http://ace.orst.edu/info/exteeoxnet/pips/2,4-D.htm>
- _____. 1996c Oregon State University. EXTTOXNET Extension Toxicology Network, Pesticide Information Profiles. Dicamba. <http://ace.orst.edu/info/exteeoxnet/pips/dicamba.htm>
- _____. 1996d Oregon State University. EXTTOXNET Extension Toxicology Network, Pesticide Information Profiles. Picloram. <http://ace.orst.edu/info/exteeoxnet/pips/picloram.htm>
- _____. 1996e Oregon State University. EXTTOXNET Extension Toxicology Network, Pesticide Information Profiles. Imazethapyr. <http://ace.orst.edu/info/exteeoxnet/pips/imazetha.htm>
- _____. 1996f Oregon State University. EXTTOXNET Extension Toxicology Network, Pesticide Information Profiles. Glyphosate. <http://ace.orst.edu/info/exteeoxnet/pips/glyphosa.htm>

- _____. 1996g Oregon State University. EXTTOXNET Extension Toxicology Network, Pesticide Information Profiles. Hexazinone. <http://ace.orst.edu/info/exteoxnet/pips/hexazin.htm>
- _____. 1996h Oregon State University. EXTTOXNET Extension Toxicology Network, Pesticide Information Profiles. Sulfometuron-methyl. <http://ace.orst.edu/info/exteoxnet/pips/sulfomet.htm>
- Platts, W. S. 1991. Livestock grazing. Pages 389-423 in *Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats*, W. Meehan, editor. American Fisheries Society Special Publication 19:389-423.
- Randal, J. 1996. Weed control for the preservation of biological diversity. *Weed Technology* 10 (2): 370-393.
- Reel, S., L. Schassberger, and W. Ruediger. 1989. *Caring for our natural community: Region 1 – Threatened, Endangered, and Sensitive Species Program*. USDA Forest Service, Northern Region. Missoula, MT. 321 pages.
- Reynolds, R., R. Graham, M. Hildegard Reiser, R. Bassett, P. Kennedy, D. Boyce, Jr., G. Goodwin, R. Smith, and E. Fisher. 1992. *Management recommendation for the northern goshawk in the southwestern United States*. General technical Report RM-217. Fort Collins, CO. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 90 pages.
- Rice, P. and J. Rider. 1995. *Landscape Ecology, Noxious Weed Invasion Analysis*. Report prepared for USFS, Northern Region, Missoula, MT.
- Rice, P., J. Toney, D. Bedunah, and C. Carlson. 1997. Elk winter forage enhancement by herbicide control of spotted knapweed. *Wildlife Society Bulletin* 25: 627-633.
- Rice, P. 1999. *Invaders Database*. University of Montana. URL: <http://invader.dbs.umt.edu/>
- Robinson, J.M and L.A. Fox. 1978. 2,4-D herbicides in central Washington, APCA J. 28, 1015. in Grover. F. 1991. *Environmental Chemistry of Herbicides*. Nature, transport, and fate of airborne residues.
- Ross, J.H., M.H. Dong and R.I. Krieger. 200. Conservatism in pesticide exposure assessment. *Regulatory Toxicology and Pharmacology* 31:53-58.
- Rosentreter, R. 1994. Displacement of rare plants by exotic grasses. In: S.B. Monsen and S.G. Kitchen eds. *Proceedings of Ecology and Management of Annual Rangelands*. Ogden, Utah: USDA FS intermountain Research Station. Gen. Technical Report INT GTR-313. 170-175.
- Ruediger, B., J. Claar, S. Gniadek, B. Holt, L. Lewis, S. Mighton, B. Naney, G. Patton, T. Rinaldi, J. Trick, A. Vandehey, F. Wahl, N. Warren, D. Wenger, and A. Williamson. 2000. *Canada Lynx Conservation Assessment and Strategy*. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication #R1-00-53, Missoula, MT. 142 pp.
- Ruggiero, L., K. Aubry, S. Buskirk, L. Lyon, W. Zielinski, tech editors. 1994. *The Scientific Basis for Conserving Forest Carnivores: American Marten, Fisher, Lynx, and Wolverine in the Western United States*. General Technical Report RM-254. Ft. Collins, CO. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 184 pages.
- Rycher, R. and J. Skujins. 1974. Nitrogen fixation by blue-green algae-lichen crusts in the Great Basin Deser. *Soils Sci. Soc. Amer. J.* 338:768-771.

- Safe, S. 1990. Polychlorinated biphenyls (PCBs), dibenzo-p-dioxins (PCDDs), dibenzofurans (PCDFs), and related compounds: environmental and mechanistic considerations which support the development of toxic equivalency factors (TEFs). *Critical Reviews in Toxicology* 21(1):51-88.
- Schwartz, C.C., M.A. Haroldson, K. Gunther, and D. Moody. 2002. Distribution of grizzly bears in the Greater Yellowstone Ecosystem, 1990-2000. *Ursus* 13:203-212.
- Servheen. 1993. Grizzly bear recovery plan. USDI Fish and Wildlife Service. Missoula, MT. 181 pages.
- Shovic, Henry, F. April 2, 2003. Relative Aquifer Vulnerability Evaluation for the Gallatin National Forest. Gallatin National Forest, Box 130, Bozeman, MT 59715.
- Smith, D. 1998. Yellowstone wolf project: annual report, 1997. National Park Service, Yellowstone Center for Resources, Yellowstone National Park, WY. YCR-NR-98-2. 20 pages.
- Stalling, 1999. Weeds: An exotic Invasive of Elk Country. Rocky Mountain Elk Foundation.
- Stangl, J.T. 2000. Ecology and Management of Bald Eagles on Hebgen and Earthquake Lakes, Gallatin County, MT. USDA Forest Service, Gallatin National Forest, Hebgen Lake Ranger District.
- Teske, M.E. and H.W. Thistle. 1999. A simulation of release height and wind speed effects for drift minimization. American Society of Agricultural Engineers. Applied Engineers. Transactions of the ASAE. Vol.42(3):583-391.
- Teske, M.E., H.W. Thistle, and R.E. Mickle. 2000. Modeling finer droplet aerial spray drift and deposition. American Society of Agricultural Engineers. Applied Engineering in Agriculture. Vol 16 (4):351-357.
- Thomas, J. 1979. Wildlife habitats in managed forests: The Blue Ridge Mountains of Oregon and Washington. *Agricultural Handbook* 553 p. 512.
- Thompson, D., R. Stuckey, and E. Thompson. 1987. Spread, Impact and Control of Purple Loosestrife (*Lythrum salicaria*) in North America. U.S. Fish and Wildlife Service, Washington D.C.
- Thompson, M. 1996. Winter foraging response of elk to spotted knapweed removal. *Northwest Science*. 70(1):10-91.
- Tomback, D., S. Arno, R. Keane. 2001. Whitebark pine communities: ecology and restoration. Island Press, Washington, D.C. 440 pages.
- Trammell, M. and J. Butler. 1995. Effects of exotic plants on native ungulate use of habitat. *Journal of Wildlife Management*. 59(4):808-816.
- Tyser, R. and C. Key. 1988. Spotted knapweed in natural area fescue grasslands: An ecological assessment. (Abstract) *Northwest Science* 62:151-160.
- USDOE-Bonneville Power Administration. 2000. 2, 4-D: Herbicide Fact Sheet. Bonneville Power Administration:
http://www.efw.bpa.gov/portal/Organizations/Government/Federal/Dept_of_Energy/BPA/Environment/NEPA/Vegetation/appenH.pdf
- USDI, BLM. 1985. Final Environmental Impact Statement. Northwest Area Noxious Weed Control Program. Portland, OR. 295 pp.

- US EPA. 1989. US Environmental Protection Agency. Integrated Risk Information System. 2,4 – Dichlorophenoxyacetic acid (2,4-D) (CASRN 94-75-7).
- _____. 1990. US Environmental Protection Agency. Integrated Risk Information System, Hexazinone available online at <http://www.epa.gov/IRIS/subst/0246.htm>.
- _____. 1990a. US Environmental Protection Agency. Integrated Risk Information System, Chlorsulfuron available online at <http://www.epa.gov/IRIS/subst/0027.htm>.
- _____. 1995 US Environmental Protection Agency. Re-registration Eligibility Decision Picloram. August 1995
- _____. 1996a. US Environmental Protection Agency. Health Effects Test Guidelines OPPTS 870.1100: Acute Oral Toxicity. EPA 712-C-96-1920, Washington, DC.
- _____. 1996b. US Environmental Protection Agency. Health Effects Test Guidelines OPPTS 870.4100: Chronic Toxicity. EPA 712-C-96-210, Washington, DC.
- _____. 1996c. US Environmental Protection Agency. Health Effects Test Guidelines OPPTS 870.1200: Acute Dermal Toxicity. EPA 712-C-96-190, Washington, DC.
- _____. 1997. US Environmental Protection Agency. Carcinogenicity Peer Review (4th) of 2,4-Dichlorophenoxyacetic acid (2,4-D) Washington DC
- USFS Department of Agriculture (USDA), Forest Service (FS). 1987. Gallatin National Forest Plan. Bozeman. Montana.
- _____. 1991. Threatened, Endangered and Sensitive Species of the Intermountain Region. Fisheries and Wildlife Management – Intermountain Region, Ogden, Utah.
- _____. 1992. Risk assessment for herbicide use in Forest Service Regions 1,2,3,4 and 10 and on Bonneville Power Administration sites. USDA Forest Service Contract #53-3187-9-30.
- _____. 1995. Vanquish risk assessment final draft. Syracuse Environmental Research Associates, Inc. under contract with USDA Forest Service.
- _____. 1996a. Mormon ridge big game winter range restoration, Environmental Impact Statement. USDA Forest Service Lolo National Forest Missoula MT.
- _____. 1996b. Vanquish (dicamba) risk assessment final report. Syracuse Environmental Research Associates, Inc. under contract with USDA Forest Service.
- _____. 1996c. Selected commercial formulations of triclopyr – Garlon 3A and Garlon 4 risk assessment final report. Syracuse Environmental Research Associates, Inc. under contract with USDA Forest Service.
- _____. 1996d. Selected commercial formulations of glyphosate – Accord, Rodeo, Roundup and roundup Pro risk assessment final report. Syracuse Environmental Research Associates, Inc. under contract with USDA Forest Service.
- _____. 1997a. USDA Forest Service. Effects of surfactants on the toxicity of glyphosate, with specific reference to Rodeo. Syracuse Environmental Research Associates, Inc. (SERA) Syracuse. NY.
- _____. 1997b. USDA Forest Service. Selected commercial formulations of hexazinone – human health and ecological risk assessment final report. Syracuse Environmental Research Associates, Inc. (SERA) Syracuse. NY.

- _____. 1997c. USDA Forest Service. Use and assessment of marker dyes used with herbicides. Syracuse Environmental Research Associates, Inc. (SERA) Syracuse. NY.
- _____. 1998a. 2,4-Dichlorophenoxyacetic acid Formulations – Human Health and Ecological Risk Assessment Final Report. Syracuse Environmental Research Associates, Inc. under contract to USDA Forest Service. Fayetteville, New York September 1998.
- _____. 1998b. Sulfometuron methyl (Oust) final draft.. Syracuse Environmental Research Associates, Inc. (SERA) under contract to USDA Forest Service. Fayetteville, New York September 1998.
- _____. 1999a. Picloram (Tordon K and Tordon 22K) - Final Report. Syracuse Environmental Research Associates, Inc. (SERA) under contract to USDA Forest Service. Fayetteville, New York.
- _____. 1999b. Imazapyr (Arsenal, Chopper, and Stalker Formulations), Final Report. Syracuse Environmental Research Associates, Inc. (SERA) under contract to USDA Forest Service. Fayetteville, New York.
- _____. 1999c. Clopyralid (Transline), Final Report. Syracuse Environmental Research Associates, Inc. (SERA) under contract to USDA Forest Service. Fayetteville, New York.
- _____. 2000b. Metsulfuron methyl (Escort) Final Report. Syracuse Environmental Research Associates, Inc. (SERA) under contract to USDA Forest Service. Fayetteville, New York.
- _____. 2001a. Impazapic (Plateau and Plateau DG) – Human Health and Ecological Risk Assessment Final Report. Syracuse Environmental Research Associates, Inc. (SERA). Fayetteville, New York and Syracuse Research Corporation, Syracuse, New York USDA Forest Service. January 2001.
- _____. 2001b. Lolo National Forest. Big Game Winter Range and Burned Area Weed Management on the Lolo National Forest. Missoula, Montana.
- _____. 2002. Beaverhead-Deerlodge National forest Noxious Weed Control. Final Environmental Impact Statement and Record of Decision. May 2002.
- _____. 2002a. Bitterroot National Forest Noxious Weed Control. Final Environmental Impact Statement and Record of Decision. March 2003.
- _____. 2003. Helena National Forest Weed Treatment Project. Draft Environmental Impact Statement.
- U.S. Fish and Wildlife Service. 1984. American peregrine falcon recovery plan (Rocky Mountain/Southwest population). Prepared in cooperation with the American Peregrine Falcon Recovery Team. USFWS, Denver, CO. 105 pages.
- _____. 1987. Northern Rocky Mountain wolf recovery plan. U.S. Fish and Wildlife Service, Denver, CO. 119 pages.
- U.S. Fish and Wildlife Service, Nez Perce Tribe, National Park Service, and USDA Wildlife Services. 2003. Rocky Mountain Wolf Recovery 2002 Annual Report. T. Meier, ed. USFWS, Ecological Services, 100 N Park, Suite 320, Helena, MT. 64 pp.
- Van den Berg et al. 1998. Toxic Equivalency Factors for PCBs, PCDDs, PCDFs for Humans and Wildlife, Environ. Health perspectives 106:775-792.
- Vannote, R.L., G.W. Minshall, K.W. Cummins, J.R. Sedell, and C.E. Cushing. 1980. The river continuum concept. Canadian Journal of Fisheries and Aquatic Sciences. 37:130-137.

- Varley, J. D. and R. E. Gresswell. 1988. Ecology, status, and management of the Yellowstone cutthroat trout. American Fisheries Society Symposium 4:13-24.
- Vighi, M, and Funari, E. ed.1995. Pesticide risk in groundwater. Lewis Publishers, New York.
- Vincent, R. E. 1962. Biogeographical and ecological factors contributing to the decline of Arctic grayling, *Thymallus arcticus* Pallas, in Michigan and Montana. Ph.D. dissertation, University of Michigan. 169 pp.
- Watson, V.J., P.M. Rice and E.C. Monnig. 1989. "Environmental fate of picloram used for roadside weed control." Journal of Environmental Quality 18:198-205.
- Whisenant, S. 1990. Changing fire frequencies on Idaho's Snake River Plains: ecological and management implications. In E.D. McArthur, E.V. Rommey, S.D. Smith, and P.T. Tueller, eds Proceedings-Symposium on Cheatgrass Invasion, Shrub Die-off, and Other Aspects of Shrub Biology and Management. Los Vegas, Nevada. 1989. USDA-Forest Service Intermountain Research Station Gen. Technical Report, INT -276. 4-10.
- Yates, W.E., N.B. Akesson, and D.E. Bayer. 1978; Drift of glyphosate sprays applied with aerial and ground equipment. Weed Science 26 (6):597-604.
- Vyas, N. 1999. Factors influencing estimation of pesticide-related wildlife mortality. Toxicology and Environmental Health, 15: 186-191.
- Youmans, H. 1992. Statewide elk management plan for Montana. MT Fish, Wildlife, & Parks, Helena, MT. 171 pages.
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LIST OF ACRONYMS

EA	Environmental assessment
EIS	Environmental Impact Statement
EPS	Environmental Protection Service
FSM	Forest Service Manual
NEPA	National Environmental Protection Act
NOI	Notice of Intent
OHV	off-highway vehicle
ROD	Record of Decision
USC	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish Wildlife Service
USGA	United States Geologic Survey
WSA	Wilderness Study Area

GLOSSARY

Acre-feet. The volume required to cover one acres to a depth of one foot, which is equivalent to 43560 cubic feet.

Acute Toxicity. The toxicity of a material determined at the tend of 24 hours; toxicity that causes injury or death from a single dose or exposure

Chronic Toxicity. The toxicity of a material determined beyond 24 hours and usually after several weeks of exposure.

Dermal Toxicity. Toxicity of a material as tested on the skin, usually on the shaved belly of a rabbit; the property of a pesticide to poison an animal or human when absorbed through the skin.

Electrical Conductivity (or Specific Conductance). The ability of water or a soil-water paste to transmit electrical current used to estimate ion concentration.

Endangered Species. Species in danger of extinction throughout all or a significant portion of its range.

Evapotranspiration (ET). The portion of precipitation returned to the air through evaporation and transpiration.

Flux. Volume of groundwater per unit time that travels through a solid permeable medium, such as alluvium and bedrock.

Hydraulic Conductivity (K). A coefficient of proportionality describing the rate at which water can move through a permeable medium.

Hydraulic Gradient. For groundwater, the rate of change of total height per unit of distance of flow at a given point and in a given direction.

Hydrograph. A graph that shows some property of groundwater or surface water as a function of time.

Hydrophytic Vegetation. The total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.

Irretrievable. Typically used to describe renewable resources that are lost for a period of time such as timber production from land that has been converted to use for a ski area or other activity.

Irreversible. Usually used to describe use of nonrenewable resources such as extraction of minerals or removal of cultural resources where the resource is, for all intents and purposes, lost. This term is also applicable to loss of future options or alternatives based on present decisions.

LD50. A lethal dose for 50 percent of the test organisms. The dose of toxicant producing 50 percent mortality in a population. A value used in presenting mammalian toxicity, usually oral toxicity, expressed as milligrams of toxicant per kilogram of body weight *mg/kg).

Mitigation. Actions to avoid, minimize, reduce, eliminate, replace, or rectify the impact of a management practice.

Peak Flow. The greatest flow attained during large precipitation event.

pH. The negative \log_{10} of hydrogen ion activity in solution; measure of acidity or alkalinity of a solution.

Scoping. Procedures by which agencies determine the extent of analysis necessary for a proposed action (i.e., the range of actions, alternatives, and impacts to be addressed; identification of significant issues related to a proposed action; and the depth of environmental analysis, data, and task assignments needed).

Sediment Load. The amount of sediment (sane, silt, and fine particles) carried by a stream or river.

Significant. As used in NEPA, requires consideration of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole, and the affected region, interests, and locality. Intensity refers to severity of impacts (40 CFR 1508.27).

Storage Coefficient (S). Volume of water that an aquifer releases from storage per unit surface area of aquifer per unit decline in the component of hydraulic head normal to the surface: S is dimensionless.

Total Suspended Particulate (TSP). Particulates less than 100 microns in diameters (Stole s equivalent diameter).

Total Dissolved Solids (TDS). Total amount of dissolved material, organic or inorganic, contained in a sample of water.

Total Suspended Solids (TSS). Undissolved particles suspended in liquid.

Transmissivity (T). The rate at whic h water will flow through a vertical strip of aquifer one foot wide and extending through the full saturated thickness, under a hydraulic gradient of 1.0.